

Work Order ID 58758

Tuesday, May 18, 2010 12:43:41 PM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 5/18/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/2/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan: *[Signature]*

Date: *10-5-18*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

Draw Nbr

Revision Nbr

D2580

Rev D

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

8/10/06/09

for BG 10/06/03

110

0.00



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio FT009

2-Cut tubes as per Dwg. D2580

M 10/5/25

58758

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120		0.00							
Skidtubes	Memo	0.00							
Skidtubes	1- Deburr ends								
	2- C'sink holes as per dwg without cutting fluid								
	3- Prepare tube for welding, remove alodine as required.								
	4- Scribe batch number insied aft end of tube.								
130	QC5- Inspect part completeness to step on W/O	0.00							
QC	Memo	0.00							
Quality Control									

M 10/5/25

①

BE 10/05/25

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Skidtubes

Memo

0.00

Skidtubes

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod *ml 12/26/00**BE 10/05/25*

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI 004.

For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill
A/R□□□ Aluminum Rod *ml 12/26/00**BE 10/05/25*

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

*10/19/27*4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Debur5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580.
Debur holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

10/15/11

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

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Run Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00

2141 16/06/02



Powdercoat

Memo

0.00

Powder Coating

START TIME: 7:30AM
OVEN TEMPERATURE: 320°F
FINISH TIME: 8:00AM

1 0

190

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

① BL 10-6-3.

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200

0.00



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 113435 ☐

Sikaflex expire date: 10/11

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 113435 ☐

Sikaflex expire date: 10/11

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: 114432

① BK 10-6-3.

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

210

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

S 10/06/03



Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220

Packaging

0.00



Packaging

Memo

0.00

Identify and pack for shipping as per PPPD205-634-041

Location: _____

PPP Rev: _____

M

P 4/6/50

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/06/10

MF 10-6-9

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Picklist Print

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IPP Rev P 10.02.19 per PAR09-043 EC verified by: DD
IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev: P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

D2580-1 Manufactured No 110 Each 6.0000 1

205 Skidtube bent detail

Location	Loc Qty	Loc Code
LG	6	
57028	1	
58090	1	
58112	2	
58384	1	
58385	1	

B58748 ① 10/05/25

D2576-3 Manufactured No 140 Each 105.0000 1

Step (maching detail)

Location	Loc Qty	Loc Code
LG	105	
46661	57	
52215	48	

BE 10/05/25

D2579 Manufactured No 140 Each 93.0000 20

Crossbolt Spacer

Location	Loc Qty	Loc Code
LG	93	
57052	5	
57348	88	



B58433

x4 BE 10/05/25
x16 3

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 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

D2855 Manufactured No 200 Each 102.0000 1



Cap



Location	Loc Qty	Loc Code
FP6	2	
56613	2	
ST026	100	
50513	1	
50770	28	
51539 ✓	17	
53791	54	

1 BR 10-6-3

AN3-5A Purchased No 200 Each 957.0000 2



Bolt



Location	Loc Qty	Loc Code
ST350	957	
105057 ✓	957	

2 BR 10-6-3

AN960JD10L Purchased No 200 Each 4,141.000 2



Washer



Location	Loc Qty	Loc Code
ST348	4141	
110985 ✓	4141	

2 BR 10-6-3

ALS7-1032-130 Purchased No 200 Each 17.0000 50



Insert



Location	Loc Qty	Loc Code
ST282	17	
114654	17	
110238	17	

50 . BR 10-6-3

ALS4-1032-130

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Shop Packet Print

Page 2

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 IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

AN3C4A Purchased No 200 Each 1,549.000 50



BOLT

Location	Loc Qty	Loc Code
ST350	1549	
114103 ✓	501	
114108 ✓	300	
114416	12	
114523	736	

50 BR 10-6-3

AN960C10L Purchased No 200 Each 0.0000 50



washer

NAS1149C03322 114341



50 BR 10-6-3

D3566-13 Manufactured No 200 Each 30.0000 1



Gasket

Location	Loc Qty	Loc Code
FP	30	
53461 ✓	30	

1 BR 10-6-3

D3566-5 Manufactured No 200 Each 18.0000 1



Gasket

Location	Loc Qty	Loc Code
FP015	18	
57682 ✓	18	

1 BR 10-6-3

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Start Qty: 1.00

Required Qty: 1.00

D3566-1 Manufactured No 200 Each 35.0000 2



Gasket



Location	Loc Qty	Loc Code
FP015	35	
57715	14	
58182 ✓	21	

2 BL 10-6-3

D3564-11 Manufactured No 200 Each 6.0000 1



Wearshoe



Location	Loc Qty	Loc Code
FP019	6	
59021	6	
57957		

1 BL 10-6-3

D3564-13 Manufactured No 200 Each 24.0000 1



Wearshoe



Location	Loc Qty	Loc Code
FP17	24	
57684 ✓	10	
57922	14	

1 BL 10-6-3

D3564-9 Manufactured No 200 Each 19.0000 1



Wearshoe



Location	Loc Qty	Loc Code
FP	1	
55334	1	
FP019	18	
57685	4	
57958 ✓	14	

1 BL 10-6-3

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Start Qty: 1.00

Required Qty: 1.00

D3564-5 Manufactured No 200 Each 4.0000 1



Wearshoe



Location	Loc Qty	Loc Code
FG	1	
34806	1	
FP19 58704	3	
57525	1	
57729	2	

1 BR 10-6-3

D2594-3 Manufactured No 200 Each 359.0000 16



O-Ring, 205 Skidtube



Location	Loc Qty	Loc Code
FP	359	
55546	19	
58191	340	

16 BR 10-6-3

D2594-1 Manufactured No 200 Each 534.0000 16



Plug, 205 Skidtube



Location	Loc Qty	Loc Code
FP	334	
42807	112	
55002	80	
57826	142	
FP14	200	
58434	200	

16 BR 10-6-3

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DART

DESIGN #	DRAWN BY RH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY SCALE NTS	
A	95.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07-06-28 #

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL $\varnothing 0.297$ HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 58258

BS 10-5-18

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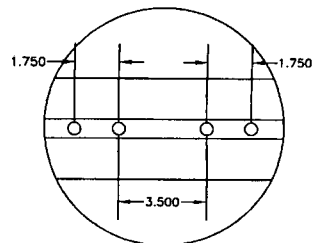
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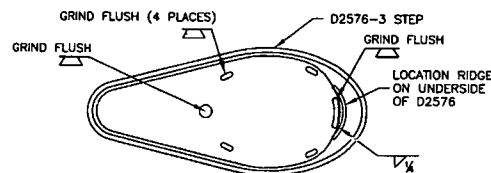
NOTE: Date & initial all entries

DETAIL A
SCALE 5:24

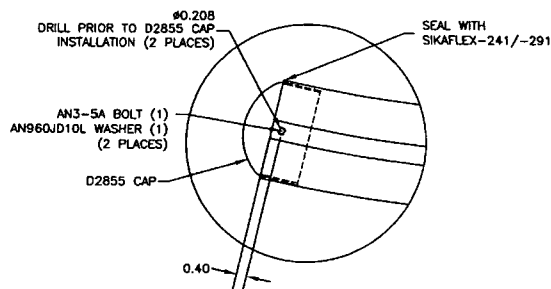


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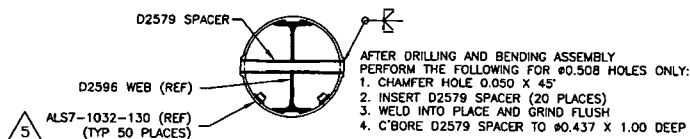
DETAIL B
SCALE 5:24



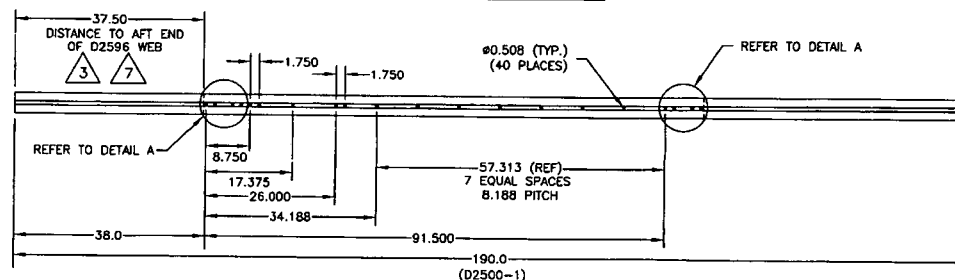
DETAIL C
SCALE 5:24



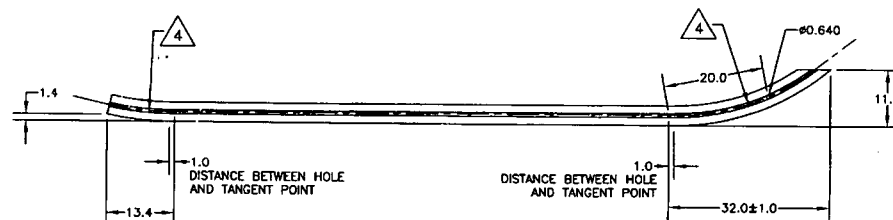
SECTION D-D
SCALE 5:24



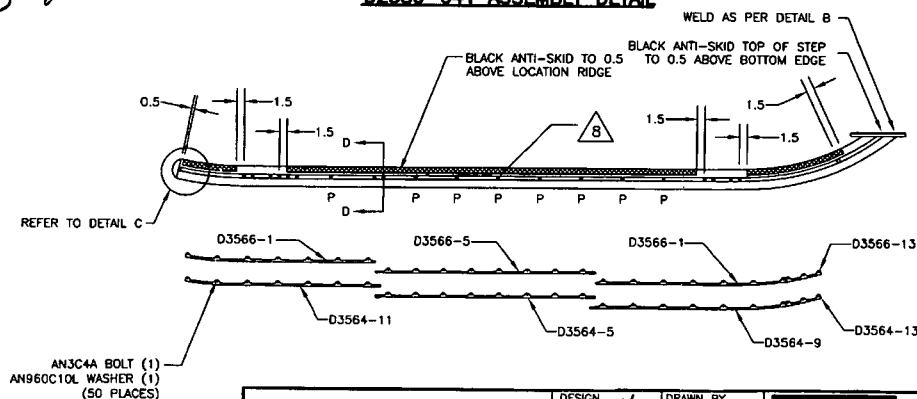
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



D2580-041 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

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DESIGN

DRAWN BY

CHECKED

APPROVED

DATE

DART

DART AEROSPACE LTD.

HAWKESBURY, ONTARIO, CANADA

DRAWING NO.

D2580

TITLE

205 SKIDTUBE ASSEMBLY

REV. D

SHEET 2 OF 3

SCALE

1:24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

RELEASED
07-16-28

Diagram illustrating the grinding locations on a propeller cross-section:

- GRIND FLUSH (4 PLACES)
- GRIND FLUSH
- D2576-3 STEP
- LOCATION RIDGE ON UNDERSIDE OF D2576
- GRIND FLUSH


Diagram illustrating the rear view of the engine cover assembly. The diagram shows the following components and their locations:

- DRILL PRIOR TO D2855 CAP INSTALLATION (2 PLACES)**: Points to two locations on the rear cover where drilling is required.
- SEAL WITH SIKAFLEX-241/-291**: Points to the sealant application area around the rear cover flange.
- AN3-5A BOLT (1)**: Points to the bolt used to secure the rear cover.
- AN960JD10L WASHER (1) (2 PLACES)**: Points to the washer used in conjunction with the bolt.
- D2855 CAP**: Points to the cap being installed on the rear cover.
- SEE NOTE ii)**: Points to a specific location on the rear cover.
- 0.40**: Dimension indicating the distance from the center of the bolt to the edge of the rear cover.

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE
WITH THE SPACER AT THIS LOCATION

[illegible][illegible][illegible]

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	CHECKED	APPROVED		DRAWING NO.	REV. 0
	DATE			TITLE	SHEET 3 OF 3
	07.02.27			205 SKIDTUBE ASSEMBLY	SCALE 1:24

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 232

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 58008
Part number: D205 634 041
Description: 205 tube
Welding Process: Tig[☒] Mig[]
Base material: Aluminium
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier Pat Donohue Date of Test Coupon 10.05.18
Welder Barclay Elliott Date of Test Coupon 10.05.18

The above named individual is qualified in accordance with AWS D17.1.2001 to weld